
Call Detail Recording Diagnostic (LD 40, LD 42)

The Call Detail Recording (CDR) feature outputs call records to a single, or multi-port, tape drive storage system. The tapes are processed to produce billing reports.

The CDM programs (LD 40 and LD 42) test the link and the external storage system. The CDM messages indicate problems with the CDR storage system and are output in response to commands issued in LD 42.

Some CDM messages contain the following output data. The hexadecimal number must be translated into a binary number (see **HEX**).

S = Status — This is the status of the CDR system. It contains 4-digit hexadecimal numbers. Each bit indicates the presence (1) or absence (0) of a fault.

- bit 15—busy
- bit 14—parity error
- bit 13—multi-track error, bad preamble or postscript
- bit 12—single track error
- bit 11—tape mark detected
- bit 10—identification burst detected
- bit 9—not ready status
- bit 8—tape is write protected
- bit 7—load point
- bit 6—end-of-tape
- bit 5—rewinding
- bit 4—off-line
- bit 3—unexpected interrupt
- bit 2—incorrect length
- bit 1—read-back (echo) check failed
- bit 0—timeout

U = Unexpected — This is any unexpected interrupts or faults. It contains 4-digit hexadecimal numbers. Each bit indicates the presence (1) or absence (0) of a fault.

bit 15—timer interrupt

bit 14—not-ready interrupt

bit 13—write warning

bit 12—read warning

bit 11—end-of-block

bit 10—not used

bit 9—ready interrupt

bit 8—queue won't fill

bit 7—position change but no load point or end-of-tape

bit 0-6—not used

F = Function — This is a fault condition. It contains 4-digit hexadecimal numbers. The last digit indicates the fault type as follows:

- 0—software status
- 1—write identification burst
- 2—write tape mark
- 3 —write data block
- 4 —read
- 5—read-back (echo) check
- 6—skip
- 7—erase gap
- 8—erase to end of tape
- 9—backspace
- A—rewind
- B—unload
- C—terminate previous function

CDM messages

CDM0000	Call Detail Recording Diagnostic Program (LD 42) identifier.
CDM0001	Invalid command. Action: Check and re-enter the command.
CDM0002	Invalid operand, too many operands or operand out-of-range. Action: Check command and operands; re-enter.
CDM0010	Invalid operand, too many operands or operand out-of-range. Action: Check command and operands; re-enter.
CDM0011 x	Device x is not a link or it is disabled or unequipped. Action: Use STAT N command to check state of device.
CDM0012 x	The echo test failed on link x. If the CDR machine is running and indicates no unusual conditions in its maintenance display, then something in the communication channel between the SL-1 machine and CDR is faulty. It could be a faulty SDI, modem, cable or line, or the option plug on the SDI pack may be in the wrong position. Action: If modems are involved, the fault may be isolated by setting the loop back switches (if present) and using the ECHO command to perform the ECHO test. Having isolated the fault as much as possible, the remaining equipment should be replaced one by one until the fault is cleared.
CDM0013 x	Link x has timed out or it had a transmission error 3 times in a row. This message may occur in response to a command that requires communication between CDM and the CDR machine, or it may occur while CDM is trying to keep the CDR machine in maintenance mode. The command requested was not performed because of a transmission error on the link. This will also occur if the CDR machine is not responding. Very occasional transmission errors are acceptable and should be ignored. Action: Reissue the command. If the problem recurs, the ECHO command may be used to test the link. To check if CDR is responding, press the RESTORE button. The tape should move backwards a short distance then forward again.
CDM0014	This command may not be issued unless the PORT command has been used to set the port to which it applies.
CDM0015	Invalid hexadecimal digit was output.

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CDM0016	This command is only permitted from a TTY. Action: Login on a TTY to use the command.
CDM0017 x	Maintenance request was rejected by item at end of link x. Action: See the description of CDR maintenance mode in LD 40,42. Either maintenance mode timed out and hence CDR is no longer in maintenance mode. If it occurred when the GET command was issued, the device at the end of the link is not a CDR machine. If the device is not a CDR machine, then CDM may not be used to perform maintenance on it except for the ECHO command.
CDM0018	Maintenance mode is already set. The command is ignored.
CDM0019	This command cannot be issued unless maintenance mode is set. Action: See the description of maintenance mode in LD 40,42.
CDM0020	The device is not of the type specified or the device is not equipped.
CDM0021	Device is already enabled.
CDM0022	The device did not respond. Action: Check that the address switches are set correctly and that the pack is enabled. Otherwise, the pack is faulty.
CDM0023	The device has a permanent interrupt. The pack is probably faulty.
CDM0024	You have attempted to disable the TTY you are using. Action: Log onto another TTY or use a maintenance SL-1 telephone to disable the TTY.
CDM0025	Unable to obtain CDR call register. The LINK was not enabled. Action: Retry command. If problem persists, call registers have been lost or system is under-engineered.
CDM0026 x s u	The tape unit is not ready, off-line or rewinding on link x. Action: Correct the problem and retry the command. If none of the above caused the message, a fault is indicated in the QPC130 CDR Tape Control pack, cables or tape unit. See Summary for output codes.
CDM0027 x s u	The tape did not rewind correctly on link x. The fault is in the tape, QPC130 pack, cables or tape unit. See Summary for output codes.
CDM0028 x	Write protect status was returned on link x.

Action: Ensure that the write enable ring is installed and that the write enable light on the drive is lit. If the problem persists, suspect a fault in the QPC130, cables or tape drive.

CDM0029 x s u The write ID burst function failed on link x.

Action: Retry the command. If the problem persists, the drive may need cleaning or a fault is indicated in the tape, QPC39 Timing pack, QPC130, cables or tape drive. See Summary for output codes.

CDM0030 x s u Erase gap function failed on link x. The drive may need cleaning or a fault is indicated in the tape, QPC39, QPC130, cables or tape drive. See Summary for output codes.

CDM0031 x s u Load point status was returned when it should not have been. This problem could be caused by an extra or damaged load point marker on the tape.

Action: Repeat the test with a different scratch tape. If the fault persists, suspect the QPC130, QPC39, cables or tape unit. See Summary for output codes.

CDM0032 x s u EOT status was returned by the tape unit when it should not have been. An extraneous EOT marker may be on the tape.

Action: Retry command with a different tape. If the problem persists, a fault is indicated in the QPC130, cables or tape drive. See Summary for output codes.

CDM0033 x s u An unexpected interrupt occurred on link x. The fault could be in the tape, QPC39, QPC130, cable or tape drive. See Summary for output codes.

CDM0034 x s u The function timed out on link x. The fault could be in the tape, QPC39, QPC130, cables or tape drive. See Summary for output codes.

CDM0035 x p h s r This is the number of each type of error that occurred during the test command on link x. If all the counts are zero, the test passed.

p = parity. Parity errors should almost never occur. They indicate an error in the transmission of data between the tape unit and the interface pack. Retry the commands. If the errors persist the fault is in the QPC130, the cables connecting the interface to the drive or the tape drive.

h = hard write. These errors should almost never occur. They indicate severe problems. Retry the command. If the errors persist, a fault is indicated in the tape, QPC130, QPC39, cables or tape unit.

s = soft write. Occasional soft write errors are acceptable. These are usually caused by faults on the tape or a dirty drive. If the problems persist after cleaning the drive and ensuring that a good tape is being used, the fault is probably in the QPC39, QPC130, cables or tape drive.

r = read. These errors are about as serious as soft write, and usually have the same causes.

CDM0036 x s u ID burst detection failure. When the tape was read, the ID burst was not found where it was expected.

Action: Retry the command. If the trouble persists, the fault is in the tape, QPC39, QPC130, cables or tape drive. See Summary for output codes.

CDM0037 x CDR machine attached to port x is in maintenance mode for some other SL-1 machine.

Action: The GET command will not work until the other SL-1 frees the CDR machine from maintenance mode. Wait for the CDR machine to be freed from maintenance mode by the other SL-1.

CDM0038 ENL SL1 M and DIS SL1 M commands are invalid for single-port CDR machines.

CDM0039 ENL SL1 M and DIS SL1 M commands are invalid for 8K CDR machines.

CDM0040 ENL SL1 M failed to enable the requested SL-1 port on the multi-port CDR machine.

Action: Check to make sure that M corresponds to the device address switch setting on the new QPC139 port. Check the maintenance display (if any) on the CDR machine. The SL-1 may not be connected to the CDR port indicated by the CDR maintenance display.

CDM0041 DIS SL1 M may have failed to disable the requested SL-1 port on the multi-port CDR machine. Retry the command. If the problem persists, there may be a software problem.

CDM0042 Use LD 37 to enable/disable TTY user of APL, CMC, HSL, or LSL.

CDM0043 Use LD 48 to enable/disable ESDI port.

CDM0044 Use LD 37 to enable/disable PMS link.

CDM0101 x Program was unable to get diagnostic information from CDR link x. The link timed out or had a transmission error 3 times.

Action: Use ECHO test to check link. See comments for CDM013. Minor alarm lamp lit on attendant console.

CDM0102 x c e More than 5 percent of the writes that have been attempted since counts were reset have encountered write errors. Where: c = number of blocks written; e = number of errors occurred.

Action: If write is being successfully written, suspect the tape or intermittent drive fault. If problem continues to occur, the tape heads should be cleaned or the tape changed. Note that with more than 5 percent write errors on the whole tape, the tape will encounter EOT before the 90 percent full indicator is set.

If the tape is not being successfully written, it may have to be unloaded. Refer to the tape fault-clearing procedures.

CDM0103 x t p r Indicates number of TM errors t, parity errors p, and RBC errors r, that have occurred since the counts were reset. This message is printed if one of the counts is nonzero. TM errors indicate possible drive or tape faults.

Action: Clean tape heads and change tape. If problem persists, refer to the tape drive fault-clearing procedures.

Occasional occurrences of this message with small numbers are acceptable. If the numbers are large or the message occurs regularly, a fault is probably present.

Parity errors and RBC errors both indicate drive or interface faults. Replace the QPC130 Tape Interface and/or the cables. If problem persists, tape drive is faulty.

CDM0104 x Tape is 90 percent full on link x. 11,000 blocks have been written onto the tape. (This only occurs with 2400-foot tape reels.)

Action: Change tape.

CDM0105 x Over-temperature has been detected in the CDR cabinet on link x. The CDR machine may be in too warm a location. Minor alarm lamp lit on attendant console.

CDM0106 x Fan failure has been detected in the CDR cabinet on link x.

Action: Check CDR fan operation and filter. Minor alarm lamp lit on attendant console.

CDM0107 x End-of-tape (EOT) was encountered by the drive on link x. The tape has been

Action: Change tape.

CDM0108 x Error counts could not be reset after 3 tries, i.e., counts may not be accurate for the next time the CDR runs. This message should be treated the same way as CDM101. Minor alarm lamp lit on attendant console.

CDM0109 x The system ID could not be set after 3 tries on link x. The system ID on the tape may be incorrect. Message should be treated the same way as CDM101. Minor alarm lamp lit on attendant console.

CDM

CDM0110 t l	Some call records in SL-1 machine have been lost. The total (t) is the number of records created since the counts were reset; and lost (l) is the number that were not recorded. If a CDR port (link or TTY) is disabled, that is probably why the records were lost. If not, the system does not have enough call registers.
CDM0111 x t f	ECHO test has failed (f) times out of tries. Message should be treated the same way as CDM012.
CDM0112 x	CDR link x is disabled so that the automatic tests were not performed. Minor alarm lamp lit on attendant console.
CDM0113 x	An initialize occurred in the CDR on link x. Refer to CDM118.
CDM0114 x	CDR tape drive is in disabled state. No calls are being recorded on tape. Act immediately to minimize number of lost call records. Action: If drive has had a power failure or if there is a fault code on the CDR maintenance display, see 553-2631-510. If tape is unloaded, send tape for processing and mount new tape. Press LOAD button. Respond to any fault codes. Attempt to make the drive ready for use by pressing the RESTORE button. Respond to any fault code.
CDM0115 x	Echo test failed. Link did not finish output.
CDM0116	Program tried to run for more than 20 min. Probably indicates software fault but could also occur if a large number of links are equipped on the system and have faults.
CDM0117 x r	CDM was loaded automatically for fault reason r on link x. The reasons are: a) CDR has detected a fault and requested service b) the error threshold on link was exceeded c) LD 40 was loaded manually
CDM0118 x c fp fa pg pc	This message indicates that an initialize occurred in the CDR machine. Where c = the cause: 8000 response time-out 4000 write protect violation 2000 watchdog timeout 1000 parity error 0800 software trap 0400 power reset

0000 unknown cause.

c may also contain the value of the CDR maintenance display in the right-most 2 digits. See HEX.

That there can be more than one cause for a trap resulting in a error code which is the hexadecimal sum of those shown.

fp = fault page

fa = fault address

pg = page

pc = program counter.

CDM0119 x Link x is disabled and therefore the automatic diagnostics were not performed for it. Minor alarm lamp lit on attendant console.

CDM0120 x c e This message should be treated as CDM102.

Where:

c = the number of blocks written

e = the number of errors that have occurred.

CDM0121 x m n t l Fault statistics on link x

Where:

m = number of different messages processed

n = number of messages not correctly received by CDR

t = the number of messages that timed out at the SL-1

l = number of messages that failed the retransmissions

These counts are reset whenever Overlay 40 is loaded or when the ENL LINK N command is used from Overlay 42. The error message is output only if n or t is nonzero.

Occasional {naks} and {time-outs} counts that do not cause lost messages are probably the result of transient noise on the link and they may be ignored. If messages are being lost, suspect a link fault.

Action: Use ECHO command to test the link.

CDM0122 x s1 u1 f1 s2 u2 f2 s3 u3 f3 Provides statistics for the last 3 tape functions which had errors on link x.

Action: If any other error codes are output, then respond to them. If this is the only error code, then suspect QPC39, QPC130, connecting cables or tape unit to be at fault. See Summary for output codes s u and f.

CDM0123 x	The device attached to port x is not a Northern Telecom single-port or multi-port CDR machine. If this error occurs with a standard CDR unit, a software problem may be indicated.
CDM0124 x	During the running of the midnight routines, an attempt to clear accumulated data for this port from memory to tape failed 3 times on link x. Data may remain in memory. Action: This should be treated like CDM101.
CDM0125 x	A software fault in the CDR link x has occurred.
CDM0126 x m	Because of insufficient memory space, the CDR machine x had to discard m data messages. The discard may occur if the tape drive spends too long not writing. For example, replacing a tape during a period of heavy traffic could cause some data to be lost unless the replacement is executed quickly.
CDM0202	This command is not applicable to the TTY for MSDL, or CPSI cards, and option 81 PTY type.
CDM0203	Failed to setup the global pointers to the SDI data structures.
CDM0204	Failed to setup the global pointers to the MSDL data structures.
CDM0205	The MSDL card is not enabled and operational. Therefore the TTY/LINK cannot be enabled. Action: First enable the MSDL card.
CDM0206	The PSDL failed to download the SDI application to the MSDL card. As a result the enable command is not executed.
CDM0207	The enable SDI application response did not arrive from the MSDL card. As a result the enable command is not executed.
CDM0208	The msdl_sdi_maint failed to execute the outgoing request command. As a result the enable command is not executed.
CDM0209	The enable confirm did not arrive from the MSDL command. As a result the enable command is not executed.
CDM0210	The SDI state machine is in an unexpected state. As a result the enable command is not executed.
CDM0211	Cannot disable the MSDL TTY port. Try the disable command again.
CDM0213	Cannot use "DIS TTY #" to disable STA administration terminal.

CDM0214 Cannot use "ENL TTY #" to enable STA administration terminal.

CDM0900 A software fault has occurred in CDM or CDMA.

Action: Retry the command if Overlay 42 is being used.